

CLAIMS

1. A liquid crystal display panel system responsive to a highlighting
5 request comprising:
a lamp providing lighting to the liquid crystal display panel, the
lamp having a normal mode and a highlighting mode;
a power unit operatively coupled to the lamp, the power unit
providing current to the lamp, the power unit being responsive to a control
10 signal; and
a user interface operatively coupled to the power unit, the user
interface providing the control signal to the power unit;
wherein the user interface provides an intermediate control
signal in response to the highlighting request, the intermediate control signal
15 causing the power unit to increase the current to the lamp from normal mode
current to an intermediate current above highlighting mode current, then to
decrease the intermediate current to the highlighting mode current.
2. The system of claim 1 wherein the intermediate control signal
20 causes the power unit to increase the current to the lamp from normal mode
current to an intermediate current above highlighting mode current in a step
change, then to decrease the current to the lamp exponentially to the
highlighting mode current.
- 25 3. The system of claim 1 wherein the intermediate control signal
causes the power unit to increase the current to the lamp from normal mode
current to an intermediate current above highlighting mode current in a step
change, to hold the intermediate current for a predetermined time, then to
decrease the current to the lamp linearly to the highlighting mode current.

4. The system of claim 1 wherein the integrated area under an intermediate current-time curve is maximized for the characteristics of the lamp.

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5. The system of claim 1 wherein the power unit comprises a power supply supplying DC output voltage to an inverter, the inverter providing current to the lamp.

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6. The system of claim 5 wherein the power supply controls the current to lamp by varying DC output voltage in response to the control signal.

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7. The system of claim 5 wherein, in response to the control signal, the inverter controls the current to lamp by varying a current parameter selected from the group consisting of frequency, phase, pulse width modulation, and a combination thereof.

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8. The system of claim 1 further comprising:
an LC driver responsive to a highlight area control signal from the user interface; and
the liquid crystal display panel having a highlight section;
wherein the LC driver controls lighting of highlight section of the liquid crystal display panel.

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9. The system of claim 1 further comprising a lamp output sensor monitoring light output of the lamp and providing a lamp output feedback signal, the lamp output feedback signal controlling the intermediate control signal.

10. A liquid crystal display panel system responsive to a highlighting request comprising:

- means for lighting the liquid crystal display panel, the lighting
- 5 means having a normal mode and a highlighting mode;
- means for supplying current to the lighting means, the current supplying means being responsive to a control signal;
- means for interfacing with a user, the user interfacing means providing the control signal to the current supplying means;
- 10 wherein the user interfacing means provides an intermediate control signal in response to the highlighting request, the intermediate control signal causing the current supplying means to increase the current to the lighting means from normal mode current to an intermediate current above highlighting mode current, then to decrease the intermediate current to the
- 15 highlighting mode current.

11. The system of claim 10 wherein the intermediate control signal causes the current supplying means to increase the current to the lighting means from normal mode current to an intermediate current above
- 20 highlighting mode current in a step change, then to decrease the current to the lighting means exponentially to the highlighting mode current.

12. The system of claim 10 wherein the intermediate control signal causes the current supplying means to increase the current to the lighting
- 25 means from normal mode current to an intermediate current above highlighting mode current in a step change, to hold the intermediate current for a predetermined time, then to decrease the current to the lighting means linearly to the highlighting mode current.

13. The system of claim 10 wherein the integrated area under an intermediate current-time curve is maximized for the characteristics of the lighting means.

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14. The system of claim 10 wherein the current supplying means comprises means for supplying DC output voltage to means for inverting DC to AC, the DC to AC inverting means providing current to the lighting means.

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15. The system of claim 14 wherein the DC output voltage supplying means controls the current to lighting means by varying DC output voltage in response to the control signal.

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16. The system of claim 14 wherein, in response to the control signal, the DC to AC inverting means controls the current to lighting means by varying a current parameter selected from the group consisting of frequency, phase, pulse width modulation, and a combination thereof.

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17. The system of claim 10 further comprising:
an means for driving LCs responsive to a highlight area control signal from the user interface; and
the liquid crystal display panel having a highlight section;
wherein the LC driving means controls lighting of highlight section of the liquid crystal display panel.

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18. The system of claim 10 further comprising means for monitoring light output of the lighting means and providing a lamp output feedback signal, the lamp output feedback signal controlling the intermediate control signal.

19. A method of highlighting a liquid crystal display panel in response to a highlighting request comprising the steps of:

- 5 providing a lamp for lighting the liquid crystal display panel, the lamp having a normal mode and a highlighting mode;
- increasing current to the lamp from normal mode current to an intermediate current above highlighting mode current in response to the highlighting request; and
- 10 decreasing the intermediate current to the lamp to the highlighting mode current.

20. The method of claim 19 further comprising the step of holding the intermediate current to the lamp for a predetermined time.

- 15 21. The method of claim 19 wherein the step of increasing current to the lamp from normal mode current further comprises increasing current by an increase selected from the group consisting of a step increase, a linear increase, and an exponential increase.

- 20 22. The method of claim 19 wherein the step of decreasing the intermediate current to the lamp from normal mode current further comprises decreasing intermediate current by a decrease selected from the group consisting of a step decrease, a linear decrease, and an exponential decrease.

- 25 23. The method of claim 19 wherein the integrated area under an intermediate current-time curve from starting to increase current to the lamp from normal mode current until finishing decreasing the intermediate current to the lamp to reach the highlighting mode current is maximized for the
- 30 characteristics of the lamp.

24. The method of claim 19 further comprising the steps of:
monitoring light output of the lamp to produce a lamp output
feedback signal; and

5 adjusting the intermediate current based on the lamp output
feedback signal.

25. A liquid crystal display panel system responsive to a highlighting
termination request comprising:

10 a lamp providing lighting to the liquid crystal display panel, the
lamp having a normal mode and a highlighting mode;

a power unit operatively coupled to the lamp, the power unit
providing current to the lamp, the power unit being responsive to a control
signal; and

15 a user interface operatively coupled to the power unit, the user
interface providing the control signal to the power unit;

wherein the user interface provides an intermediate control
signal in response to the highlighting termination request, the intermediate
control signal causing the power unit to decrease the current to the lamp from
20 highlighting mode current to an intermediate current below normal mode
current, then to increase the intermediate current to the normal mode current.